PANEL REPORT BY THE MODERATOR

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Operational oceanography in the Mediterranean and the Black Sea has been evolving rapidly in the last decades. Despite recent initiatives, the inter-disciplinary monitoring and modeling of the Marmara Sea and Turkish Strait System (including outflows) still remains a challenging task and deserves increased attention due to the systems role in limiting exchanges and interactions between the basins and various environmental, navigation, and security considerations.

Panel 7 was devoted to recent advances in understanding this complex hydrodynamic and bio-geochemical system and in improving our corresponding prediction skills in the area. It was also meant to strengthen ongoing scientific efforts and to set the grounds for future international collaboration.

The session started with a general introduction by the panel moderator, emphasizing the complexity of the Turkish Strait system, which comprises the Marmara Sea, a buffer zone, and two very narrow straits, the Bosphorus and the Dardanelles respectively, and stressing its maritime and ecological importance. Standard monitoring and modeling techniques do not apply in the area and require the development and implementation of ad-hoc approaches to the problem: trawl-safe moorings, high resolution models, etc.

Sukru Besiktepe presented a general introduction to the circulation, hydrography, biology and chemistry of the area and highlighted the importance of the Mediterranean inflow as the only major source of dissolved oxygen input for the Black Sea.

Villy Kourafalou reviewed the interactions between the Dardanelles outflow and the Aegean and its implications on the basin-wide circulation and operational modeling and stressed the importance of a real-time monitoring of the Dardanelles outflow area for reliable predictions in the Aegean.

Tulay Cokacar presented recent modeling results of the Bosphorus flow dynamics, the role of hydraulic control of the sills in the strait, and the potential contribution of friction in controlling exchanges in the strait.

Vassilis Zervakis contrasted two major climatic regimes found in the Aegean, controlled by the estuarine state of the Dardanelles outflow, its impact on the Aegean ecosystem and various trophic levels up to fisheries stocks.

Birol Kara presented the analysis of wind speed variability over the Marmara Sea derived from Quickscat and stressed the importance of appropriate resolution in forcing fields for interdisciplinary modeling efforts.

Sulyman Tugrul presented a detailed analysis of nutrient fluxes in the Turkish Strait System and stressed the importance of the area in recycling most of the Black Sea input, concluding that there is a net dissolved nutrient export from the Marmara Sea to the Black Sea.

Ewa Jarosz reviewed present and future scientific efforts in the Turkish Strait System advocating the importance of using *ad hoc* mooring and unstructured grid techniques to improve our forecast skills for the area.

The panel discussions addressed many inter-disciplinary issues for a successful environmental management of the Turkish Strait System, which are summarized below with their recommendations:

- observational efforts in the area should focus on near-real-time cost effective, low maintenance sensors and instrumentation;
- there is an increased need for long-time series of inter-disciplinary measurements for climate studies purposes. Long-lasting operational oceanography efforts may directly contribute to these requirements;
- the area is 'tsunami' sensitive and the monitoring networks should be integrated accordingly;
- appropriate resolution for atmospheric forcing is needed to ensure reliable prediction of the hydrodynamic and coupled bio-geochemical models;
- the Turkish Strait System and corresponding outflow are highly interconnected, which requires a joint coupled observational and modeling effort;
- in-depth turbulence studies are required to achieve successful modeling in the straits because of their particular hydrodynamic and hydraulic flows;
- many research resources are available in the area but they should be better advertised and integrated.